ENTOMOLOGICAL NEWS

VOLUME LXVIII, 1957

PHILIP P. CALVERT, EDITOR EMERITUS
R. G. SCHMIEDER, EDITOR

EDITORIAL STAFF

J. A. G. REHN — M. E. PHILLIPS
E. F. J. MARX — H. J. GRANT, JR.

PUBLISHED BY
THE AMERICAN ENTOMOLOGICAL SOCIETY
THE ACADEMY OF NATURAL SCIENCES
PHILADELPHIA, PENNSYLVANIA, U. S. A.
1957

The numbers of ENTOMOLOGICAL NEWS for 1957 were mailed at the Post Office at Lancaster, Pa., as follows:

No. 1—January	January 3, 1957
No. 2—February	February 7, 1957
No. 3—March	March 8, 1957
No. 4—April	April 5, 1957
No. 5—May	April 30, 1957
No. 6—June	June 10, 1957
No. 7—July	June 29, 1957
No. 8—October	September 24, 1957
No. 9—November	October 22, 1957

The date of mailing the December, 1957, number will be announced on the last page of the issue for January, 1958.

Have you paid your subscription?

January and subsequent issues for 1957 positively not mailed unless subscription has been paid.

ENTOMOLOGICAL NEWS

JANUARY 1957

Vol. LXVIII **No. 1**

CONTENTS

Stallings and Turner—Four new species of Megathymus 1

Dvorak—A character useful in separating Cafius seminitens Horn and Cafius canescens Makl 17

Muesebeck—New World Apanteles parasitic on Diatraea 19

Review

Beiträge zur Systematik der Larven der Itonididae 25

PUBLISHED MONTHLY, EXCEPT AUGUST AND SEPTEMBER, BY
THE AMERICAN ENTOMOLOGICAL SOCIETY
PRINCE AND LEMON STS., LANCASTER, PA.
AND
1900 RACE STREET, PHILADELPHIA 3, PA.

Subscription, per yearly volume of ten numbers: $5.00 domestic; $5.30 foreign; $5.15 Canada. Entered as second-class matter April 19, 1943, at the post office at Lancaster, Pa., under the Act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for in paragraphs (d-2), Section 34.40, P. L. & R. of 1948, authorized April 19, 1943.

ENTOMOLOGICAL NEWS

ENTOMOLOGICAL NEWS is published monthly, excepting August and September, by The American Entomological Society at Prince and Lemon Sts., Lancaster, Pa., and the Academy of Natural Sciences, 1900 Race Street, Philadelphia 3, Pa., U. S. A.

PHILIP P. CALVERT, Editor Emeritus. R. G. SCHMIEDER, Editor. Editorial Staff: H. J. Grant, Jr., E. J. F. MARX, M. E. PHILLIPS, and J. A. G. REHN.

Subscription price, per yearly volume of 10 numbers: Domestic, $5.00; Foreign, $5.30; Canada, $5.15—U. S. Currency.

SUBSCRIPTIONS: Communications and remittances to be addressed to **Entomological News, 1900 Race Street, Philadelphia 3, Pa.**

ADVERTISEMENTS: Rate schedules available on request. Address, **Fred B. Jacobson, Advertising Manager, Entomological News, 1900 Race Street, Philadelphia 3, Pa.**

MANUSCRIPTS and all communications concerning same should be addressed to **R. G. Schmieder, Zoological Laboratory, University of Pennsylvania, Philadelphia 4, Pa.**

The receipt of all papers will be acknowledged and, if accepted, they will be published as soon as possible. If not accepted, authors will be so advised and postage requested for return of manuscripts. Articles longer than six printed pages may be published in two or more installments, unless the author is willing to pay for the cost of a sufficient number of additional pages in any one issue to enable such an article to appear without division.

ILLUSTRATIONS. Authors will be charged as follows: For text-figures, the cost of engraving; for insert plates (on glossy stock), the cost of engraving plus the cost of printing. The size of text-figures or plates when printed must not exceed 4 x 6 inches.

All blocks will be sent to authors after publication. It is not advisable to print half-tones as text-figures.

TABLES: Authors will be charged the setting of all tables exceeding 2 inches in height.

SEPARATA: Twenty-five extras of an author's contribution will be given free. They will be "run of form," without removal of extraneous matter, folded but not bound, uncut and without cover.

Authors wishing more than the 25 separates must so advise the Editor or the printer. See bottom of this page. The Editor requests that authors state the number of separates desired in a letter accompanying their manuscript.

SEPARATES of articles without covers, without extraneous matter, will be furnished by the printer at the following prices: 1–4 pages, 25 copies, $3.13; 50 copies, $3.13; 100 copies, $3.75. 5–8 pages, 25 copies, $5.00; 50 copies, $5.00; 100 copies, $5.94. 9–12 pages, 25 copies, $7.81; 50 copies, $7.81; 100 copies, $9.06. Covers: first 50, $3.44; additionals at .025 cents each. Plates, printed on one side: first 50, $2.50; additional at 0.188 cents each. Transportation charges will be extra. THE LANCASTER PRESS, INC., Lancaster, Pa.

ENTOMOLOGICAL NEWS

VOL. LXVIII JANUARY, 1957 No. 1

Four New Species of Megathymus (Lepidoptera, Rhopalocera, Megathymidae)

By DON B. STALLINGS and J. R. TURNER

Megathymus alliae, new species

FEMALE: Upper surface of primaries. Dull black with the base overscaled with dull yellow-brown. Spots 1 (cell spot), 2, 3, 4 (subapical spots), 5, 6 (submarginal spots), 7, 8 and 9 (discal band) bright yellow-brown. Spot 7, 9 mm. wide; spot 8, 8 mm. wide; spot 9, 7 mm. wide. The dull yellow-brown overscaling extends about halfway in the costal area, and about three-fourths the way towards the outer angle. Veins narrowly edged with dull black. Fringes dull yellow-brown with vein tips smoky.

Upper surface of secondaries. Dull black, basal third covered with dull yellow brown hairs, with further dull yellow brown overscaling in the anal area. The discal band is composed of 5 bright yellow-brown spots, separated by narrow dull black lines along the veins. The discal band is about the same width as the dull black marginal area. Fringes dull yellow-brown with vein tips faintly smoky.

Under surface of primaries. Dull black with the apex heavily overscaled with dull yellow-brown. All the spots reappear with spots 2, 3, and 4 lighter in color.

Under surface of secondaries. Dull black heavily overscaled with dull yellow-brown. The discal band appears only as a series (reduced in size) of lighter spots in the overscaling. There are two faint spots below the costal area.

Abdomen: Dull yellow-brown above, dull gray-brown below. Thorax: Dull yellow-brown above, beneath dull white. Palpi: Dull white. Antennae: Base of club white, remainder of antennae black above, lighter beneath, showing white at joints.

Expanse of forewing from 30 to 36 mm.; average 35 mm. Wing measurements of holotype: forewing, apex to base 36 mm., apex to outer angle 21 mm., outer angle to base 26 mm.; hindwing, base to end of vein Cu_1 25 mm.

MALE: Upper surface of primaries. Dull black with the base narrowly overscaled with dull yellow-brown. Spots 1, 2, 3, 4, 5, 6, 7, 8, and 9 bright yellow-brown. All spots greatly reduced in size compared with the female. All spots except 2, 3, and 4 separated from each other by more than the width of the veins. Fringes checkered dull yellow-brown and dull black.

Upper surface of secondaries. Dull black, basal half covered with dull yellow-brown hairs, extending outward in the anal area. The bright yellow-brown discal band is again greatly reduced in size, compared with the female. The spots of the discal band are separated by well defined dull black along the veins. Fringes checkered dull yellow-brown and dull black.

Under surface of primaries. Same as the female.

Under surface of secondaries. Same as the female, except that the lighter spots are only faintly discernible.

Abdomen, thorax, palpi and antennae: Same as female except palpi and underside of thorax are dull gray-brown.

Expanse of forewing from 28 to 32 mm.; average 30 mm. Wing measurements of allotype: Forewing, apex to base 30 mm., apex to outer angle 18 mm., outer angle to base 22 mm.; hindwing, base to end of vein Cu_1 20 mm.

Described from 62 specimens (35 males and 27 females) collected 15 miles west of Cameron, Ariz., along the canyon of the Little Colorado River, elevation 5000 ft. All ex-larvae or ex-pupae emerging from Aug. 25 to Oct. 5, during 1953, 1954 and 1955. Collected by Dr. and Mrs. R. C. Turner, Dee, Jack, Don, and Viola Stallings.

Holotype, female, Sept. 23, 1955, 15 miles west of Cameron, ARIZONA, el. 5000 ft. (Turner); *allotype,* male, Sept. 17, 1954, 15 miles west of Cameron, Ariz., el. 5000 ft. (Turner) are in

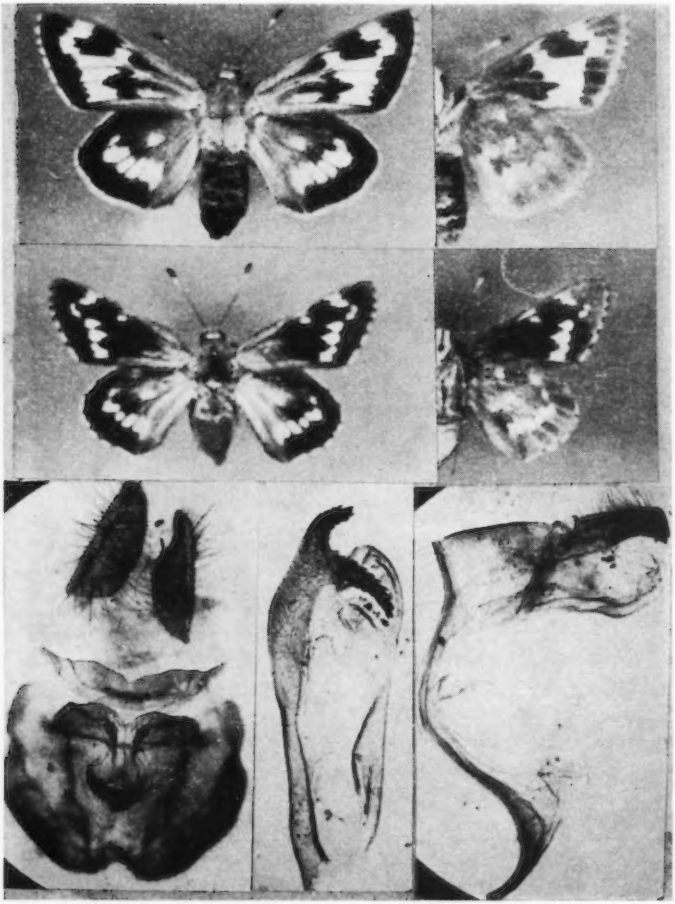

PLATE I, *Megathymus alliae*

Top row: Holotype, upper side to left; under side to right.
2nd row: Allotype, upper side to left; under side to right.
3rd row: Left: ♀ genitalia; center: ♂ valva; right: ♂ uncus.

the collection of the authors. *Paratypes* of both sexes will be placed in the following collections: H. A. Freeman, C. L. Remington, U. S. Nat. Museum, American Mus. of Nat. History, Los Angeles County Museum.

Food plant: *Agave utahensis* Engelmann.

It will be interesting to learn whether *M. alliae* uses *Agave kaibabensis* McKelvey (a closely allied species of *Agave utahensis* which occurs on the north rim of Grand Canyon) as a food plant.

The females select medium sized plants for oviposition. The trap door, which is paper white, is nearly always (we have seen one exception) on the under side of the leaf.

It is rather difficult to select the nearest relative of *M. alliae* from which to distinguish it, for *M. alliae* does not fit in with any of the now known groups of species of *Megathymus*. *M. alliae* is the largest known species in the U. S. A. that feeds on the *Agave*. We will distinguish it from *M. baueri* Stallings & Turner as the two species are similar in some respects and occur rather close to each other.

First, *M. alliae* is distinguished from *M. baueri* by its huge size. The ground-color of the upper surface of *M. alliae* is dull black while in *M. baueri* it is deep black. The under surface of *M. alliae* has much heavier overscaling and this overscaling has much more yellow in it than does *M. baueri*. In the female the deep black ground color of *M. baueri* on its upper surface is much more extensive than in *M. alliae*.

The valva of the genitalia of the male *M. alliae* is characterized by having the projection at the apex uniformly narrow. In *M. baueri* and allied species this projection is tapered. In *M. alliae* the uncus seen in lateral view abruptly turns down at its apex while in *M. baueri* and related species the apex curves down, evenly. In the female of *M. alliae* the center portion of the genital plate is built more complex than *M. baueri* and allied species.

This species is named in honor of the mother-in-law and mother of the authors, Mrs. R. C. (Allie) Turner, who has aided materially in our work on the genus *Megathymus* and who collected the first pupa of this new species.

The next three species to be described all belong to the *Megathymus neumoegeni* Edwards complex. We will first describe all three, then consider them together with *M. neumoegeni* and with *M. chisosensis* and *M. mcalpinei* recently described by H. A. Freeman, both of which belong to this group.

Megathymus judithae, new species

FEMALE: Upper surface of primaries. Light orange with a black border along the outer edge of the wing approximately 4 mm. wide. Spots 1 (cell spot), 2, 3, 4 (subapical spots), 5, 6 (submarginal spots), 7, 8, and 9 (discal band) are all fused together with the light orange in the basal area. There is an irregular black spot between the cell and subapical area. There is a black line of color in the costal area towards the base. About equidistant between the base of the wing and the outer angle there is an irregular square black spot (actually two spots fused together) that is 4 mm. wide. Above this fused spot is a small black spot 1.5 mm. wide. Fringes yellow with vein tips black.

Upper surface of secondaries. Light orange with marginal black border. There is a band of black, heavily overscaled with light orange inward from the discal area. This band becomes weaker in color and narrower as it approaches the anal area. Fringes yellow with vein tips black.

Under surface of primaries. Dull brown-black with apex overscaled with white giving it a gray appearance. Spots 1, 2, 3, 4, 5, 6, 7, 8, and 9 appear on this surface as spots. All spots light orange in color except spots 2, 3, and 4 which are white.

Under surface of secondaries. Dull brown-black overscaled with white giving a gray appearance. At the base of the wing there are a few white hairs mixed with light orange hairs. In the anal area there are a few light orange scales mixed with the white scales. The discal band is indicated by heavier white overscaling. There is a round white spot in the costal area with a smaller white spot below it.

Abdomen, orange above, gray-white beneath. Thorax, yellow-gray above, white beneath. Palpi, dull white. Antennae, white ringed with black, base of antennae white, remainder black.

MALE: Upper surface of primaries. Black with the base overscaled with light orange. Spots 1, 2, 3, 4, 5, 6, 7, 8, and 9 light orange, spot 9 narrower than spots 7 and 8. Fringes yellow with vein tips black.

Upper surface of secondaries. Light orange with a marginal black border. All very similar to female. Fringes yellow with vein tips black.

Under surface of primaries. Dull black with apex overscaled with white. Spots reappear as above, except that spots 2, 3, and 4 are white.

Under surface of secondaries. Similar to female with discal band not so well defined.

Abdomen, thorax, palpi, and antennae same as female.

Expanse of forewing of female varies from 25 to 32 mm.; average 30 mm. Wing measurements of holotype: Forewing, apex to base 32 mm., apex to outer angle 18 mm., outer angle to base 22 mm.; hindwing, base to end of vein Cu_1 22 mm.

Expanse of forewing of male varies from 26 to 29 mm.; average 28 mm. Wing measurements of allotype: Forewing, apex to base 28 mm., apex to outer angle 16 mm., outer angle to base 20 mm.; hindwing, base to end of vein Cu_1 20 mm.

Described from 24 males and 23 females collected in the Hueco Mts., near Hueco, Texas, elevation 5300 feet. All ex-larvae or ex-pupae emerging from Sept. 10 to Sept. 30 during 1953 and 1954. Collected by Dr. and Mrs. R. C. Turner, Judith, Gayle, Beulah and J. R. Turner, Dee, Jack, Viola and Don B. Stallings.

Holotype, female, Sept. 21, 1953, Hueco Mts., Hueco, TEXAS, el. 5300 ft. (Turner); *allotype,* male, Sept. 20, 1954, Hueco Mts., Hueco, Texas, el. 5300 ft. (Stallings & Turner) are in the collection of the authors. *Paratypes* of both sexes will be placed in the following collections: H. A. Freeman, C. L. Remington, U. S. Nat. Museum, American Mus. of Nat. History.

Food plant: *Agave parryi* Engelmann. It is well to note here that the name *Agave parryi* is applied loosely. *Agave parryi* in the Hueco Mts. of Texas is not the same thing as *Agave parryi* in the Guadeloupe Mts. of Texas and N. Mex.

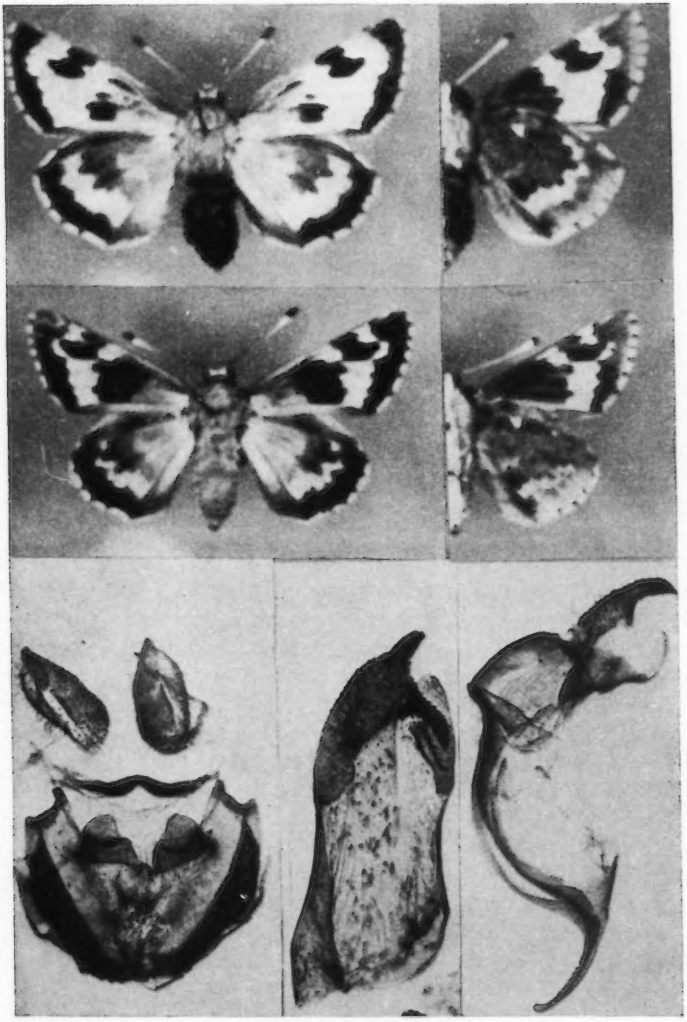

PLATE II, *Megathymus judithae*

Top row: Holotype, upper side to left; under side to right.
2nd row: Allotype, upper side to left; under side to right.
3rd row: Left: ♀ genitalia; center: ♂ valva; right: ♂ uncus.

This species is named in honor of Judith Turner, the daughter of J. R. Turner, who was present when the species was discovered and helped collect the type series.

The females select medium sized plants for oviposition. The trap door which is medium brown in color is usually on the upper side of the leaf. The length of the pupal case is 3.3 times the diameter of the case.

Megathymus carlsbadensis, new species

FEMALE: Upper surface of primaries. Bright yellow-orange with a black border along the outer edge of the wing, approximately 5 mm. wide. Spots 1 (cell spot), 2, 3, 4 (subapical spots), 5, 6 (submarginal spots), 7, 8, and 9 (discal band) are all fused together with the bright yellow orange in the basal area. There is an irregular black spot between the cell and subapical area. There is a thick black line of color in the costal area towards the base. About equidistant between the base of the wing and the outer angle there is an irregular black spot (actually two spots fused together). The bottom half of this fused spot is 4 mm. wide, the top half 5 mm. wide. Above this fused spot there is a small triangular spot (with the apex of the triangle pointed towards the base of the wing) that is 2.5 mm. wide. Fringes checkered yellow and black.

Upper surface of secondaries. Bright yellow-orange with marginal black border. There is a band of black overscaled with bright yellow-orange inward from the discal area. Fringes checkered yellow and black.

Under surface of primaries. Brown-black with apex overscaled with white giving it a gray appearance. Spots 1, 2, 3, 4, 5, 6, 7, 8, and 9 appear on this surface as spots, slightly lighter in color than the upper surface, except spots 2, 3, and 4 which are white, and spots 5 and 6 which are pale yellow-orange.

Under surface of secondaries. Brown black overscaled with white giving a gray appearance. At the base of the wing there are a few white hairs, sometimes with a few yellow hairs mixed in. In the anal area there is a strip with little white overscaling but usually has a few light orange scales. The discal band is

faintly indicated by slightly more white overscaling. There is a distinct round white spot in the costal area with a smaller (and fainter) white spot below it.

Abdomen, bright yellow-orange above, gray-white beneath. Thorax orange-gray above, gray white beneath. Palpi, gray-white. Antennae, white ringed with black, base of antennae white, remainder black.

MALE: Upper surface of primaries. Black with the base overscaled with reddish orange. Spots 1, 2, 3, 4, 5, 6, 7, 8, and 9 reddish orange. Spots 7, 8, and 9 all about the same size (3 mm.). Fringes yellow with vein tips black.

Upper surface of secondaries. Reddish orange with a marginal black border. All very similar to the female. Fringes checkered yellow and black.

Under surface of primaries. Brown-black with apex overscaled with white. Spots reappear as above, except that spots 2, 3, 4, 5, and 6 are white.

Under surface of secondaries. Similar to female.

Abdomen, thorax, palpi, and antennae same as female except for reddish orange color of abdomen and thorax above.

Expanse of forewing of female varies from 26 to 31 mm.; average 30 mm. Wing measurements of holotype, forewing, apex to base 30 mm., apex to outer angle 18 mm., outer angle to base 22 mm.; hindwing, base to end of vein Cu_1 22.5 mm.

Expanse of forewing of male varies from 25 to 29 mm.; average 27 mm. Wing measurements of allotype, forewing, apex to base 26 mm., apex to outer angle 15 mm., outer angle to base 19 mm.; hindwing, base to end of vein Cu_1 19 mm.

Described from 37 males and 25 females collected in the Guadeloupe Mts., Carlsbad Cavern National Park, New Mexico and immediately south around Nickle, TEXAS, in the Guadeloupe Mts., elevation from 4300 ft. to 5700 ft. All ex-larvae or ex-pupae emerging from Sept. 14 to Oct. 1st, during 1953 and 1954. Collected by Dr. and Mrs. R. C. Turner, Judith, Gayle, Beulah and J. R. Turner, Dee, Jack, Viola and Don B. Stallings.

Holotype, female, Sept. 21, 1953, Gaudeloupe Mts., Carlsbad Cavern National Park, NEW MEXICO, on the mesa at head of

Yucca Canyon, el. 5470 ft. (Turner); *allotype,* male, Sept. 21, 1953, same data and collector, are in the collection of the authors. *Paratypes* of both sexes will be placed in the following collections: H. A. Freeman, C. L. Remington, U. S. National Museum, American Mus. of Nat. History.

Food plant: *Agave parryi* Engelmann. There are three species of *Agave* plants in the Guadeloupe Mts.: *A. parryi, A. lechuguilla* Torrey and what we believe to be *A. chisosensis* Mueller (Mrs. Stallings and some other members of the family feel that the last named may in fact be a hybrid between the first two named).

In this area *Agave lechuguilla* always produced *Megathymus mariae* and nothing else. In the area around Nickle, Texas (Parker Ranch) we found *A. parryi* and *A. chisosensis* in about equal numbers, and in this area *Megathymus carlsbadensis* laid eggs on both species of plants in about equal numbers. In August of 1954 we made a rather careful survey of the situation. At that time nearly 80% of the *A. parryi* plants that had had eggs of *M. Carlsbadensis* laid on them, still had live larvae in the leaves (these were plants that showed that the larvae had hatched from the egg and entered the leaves). On the other hand only 20% of the *A. chisosensis* plants at that time (which had had larvae hatch and enter the leaves) had live larvae. We were successful in securing 6 butterflies from *A. chisosensis,* but these were not included in the type series of *M. carlsbadensis.* The first specimen that hatched from *A. chisosensis* (a female) was distinctly different from *M. carlsbadensis;* the other five specimens appear identical to *M. carlsbadensis.* H. A. Freeman and C. L. Remington, who have both examined the above mentioned female, are of the opinion that this female may be a distinct species. More specimens will have to be secured before a final determination can be made. In the meantime, we are inclined to consider the five other specimens that we secured from *A. chisosensis* as belonging to *M. carlsbadensis,* although we do not consider *A. chisosensis* the normal food plant. Population pressure could explain the use of this plant as food.

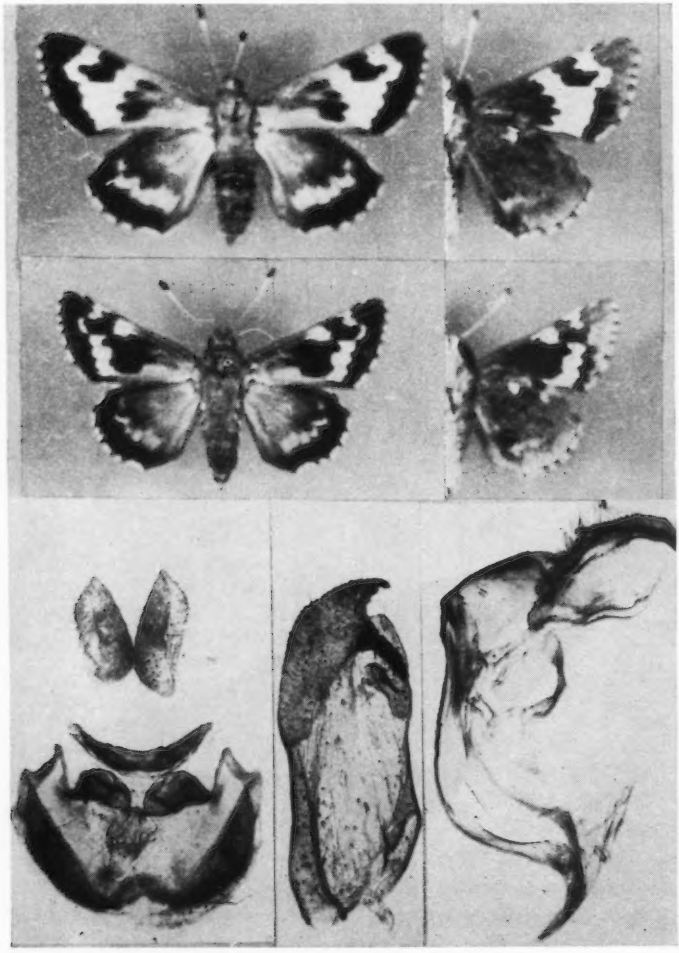

PLATE III, *Megathymus carlsbadensis*

Top row: Holotype, upper side to left; under side to right.
2nd row: Allotype, upper side to left; under side to right.
3rd row: Left: ♀ genitalia; center: ♂ valva; right: ♂ uncus.

The females select medium sized plants on which to lay eggs. The trap door, which is amber in color, is usually on the upper side of the leaf. The length of the pupal case is 3.6 times the diameter of the case.

Megathymus florenceae, new species

FEMALE: Upper surface of primaries. Bright orange with a dull black border along the outer edge of the wing, approximately 4 mm. wide. Spots 1 (cell spot), 2, 3, 4 (subapical spots), 5, 6 (submarginal spots), 7, 8, and 9 (discal band) are all fused together with the bright orange in the basal area. There is an irregular black spot between the cell and subapical area. There is a thin black line of color (sometimes absent) in the costal area towards the base. About equidistant between the base of the wing and the outer angle there is an irregular black spot (actually two spots fused together). The bottom half of the fused spot is 3 mm. wide, the top half 4 mm. wide. Fringes checkered yellow and dull black.

Upper surface of secondaries. Bright orange with marginal black border. There is a band of dull black overscaled with bright orange inward from the discal area. Fringes checkered yellow and dull black.

Under surface of primaries. Dull black with apex overscaled with white giving it a gray appearance. Spots 1, 2, 3, 4, 5, 6, 7, 8, and 9 appear on this surface as spots. All spots bright orange, except spots 2, 3, and 4 which are white.

Under surface of secondaries. Dull black sparsely overscaled with white giving a dark gray appearance. At the base of the wing there are a few white hairs mixed with light orange hairs. In the anal area there are less white scales, with some light orange scales mixed with them. The discal band is indicated by heavier white overscaling. There is a round white spot in the costal area.

Abdomen, bright orange above, gray-white beneath. Thorax, orange-gray above, gray-white beneath. Palpi, dull white. Antennae, white, ringed with black, base of antennae white, remainder black.

MALE: Upper surface of primaries. Dull black with the base overscaled with bright orange. Spots 1, 2, 3, 4, 5, 6, 7, 8, and 9 bright orange. Spot 8 (5 mm.) wider than spots 7 and 9. Inward from spot 8 there is a black spot with a small bright orange spot inward from this black spot. Fringes yellow with vein tips black.

Upper surface of secondaries. Bright orange with a marginal black border, all very similar to the female. Fringes checkered yellow and black.

Undersurface of primaries. Dull black with apex overscaled with white. Spots reappear as above except that spots 2, 3, and 4 are white.

Undersurface of secondaries. Similar to female.

Abdomen, thorax, palpi and antennae same as female.

Expanse of forewing of female varies from 26 to 31 mm.; average 30 mm. Wing measurements of holotype, forewing, apex to base 30 mm., apex to outer angle 19 mm., outer angle to base 21 mm.; hindwing, base to end of vein Cu_1 21 mm.

Expanse of forewing of male varies from 24 to 29 mm.; average 28 mm. Wing measurements of allotype, forewing, apex to base 28 mm., apex to outer angle 16.5 mm., outer angle to base 20 mm.; hindwing, base to end of vein Cu_1 20 mm.

Described from 16 males and 31 females collected in the Davis Mountains near Ft. Davis, Texas, el. 6200 ft. All ex-larvae or ex-pupae emerging from Sept. 17th and Oct. 5th, 1954. Collected by Dr. and Mrs. R. C. Turner, Dee, Jack, Viola and Don B. Stallings.

Holotype, female, Sept. 23rd, 1954, Davis Mts., Ft. Davis, TEXAS, el. 6200 ft. (Stallings & Turner); *allotype,* male, Sept. 17th, 1954, Davis Mts., Ft. Davis, Texas, el. 6200 ft. (Stallings & Turner) are in the collection of the authors. *Paratypes* of both sex will be placed in the following collections: H. A. Freeman, C. L. Remington, U. S. National Museum, American Mus. of Nat. History, Los Angeles County Museum.

Food plant: We have not been able to satisfy ourselves as to the species of plant in the Davis Mts. at this elevation (6200 ft.). It appears to be between *A. parryi* and *A. scabra* Lam-Dyck.

This species is named in honor of Miss Florence Draper, who gave the first named author, a great deal of encouragement, when a small boy, to continue his work in the field of the Lepidoptera.

For a number of years both H. A. Freeman and our group have known that a species of *Megathymus* occurred in the Davis Mts. None of us had been able to find the larvae. In 1954 Freeman was supposed to join us in a joint effort to work out the problem, but at the last minute was unable to join us. Plants of all sizes were plentiful in the area that we hunted (this species of *Agave* grows considerably bigger than *A. parryi*), but the first day that we hunted we found only one larva in a medium sized plant and it was parasitized. The second day as we continued to hunt without a sign of a larva Jack Stallings suggested that we check some of the tiny juvenile plants that are so small that they do not reach the height of the short grass in the area. Improbable as this seemed we started checking the tiny plants. The larvae were there. All of the type series were collected from these tiny plants. This distinct difference in the size of the food plant selected by the female upon which to oviposit is, in our opinion, a significant difference between this species and other species of this species group which use much larger (and older) plants on which to lay eggs. Later this same year, while on Mingus Mt. in Arizona hunting for larvae of *M. neumoegeni,* we found that *M. neumoegeni* uses the tiny juvenile plant for the food plant.

The trap door, which is amber in color, is usually on the upper side of the leaf. The length of the pupa case is 4.35 times the diameter of the case, and this difference in proportions from the two previously described species we also consider significant.

We are well aware that in describing allopatric species such as these that it may be that we are dealing with subspecies of one polytypic species. If we were separating these species on morphological characters alone we would be more inclined to treat them as subspecies. Another difficulty with treating them as subspecies is that with six distinct forms before us no cline

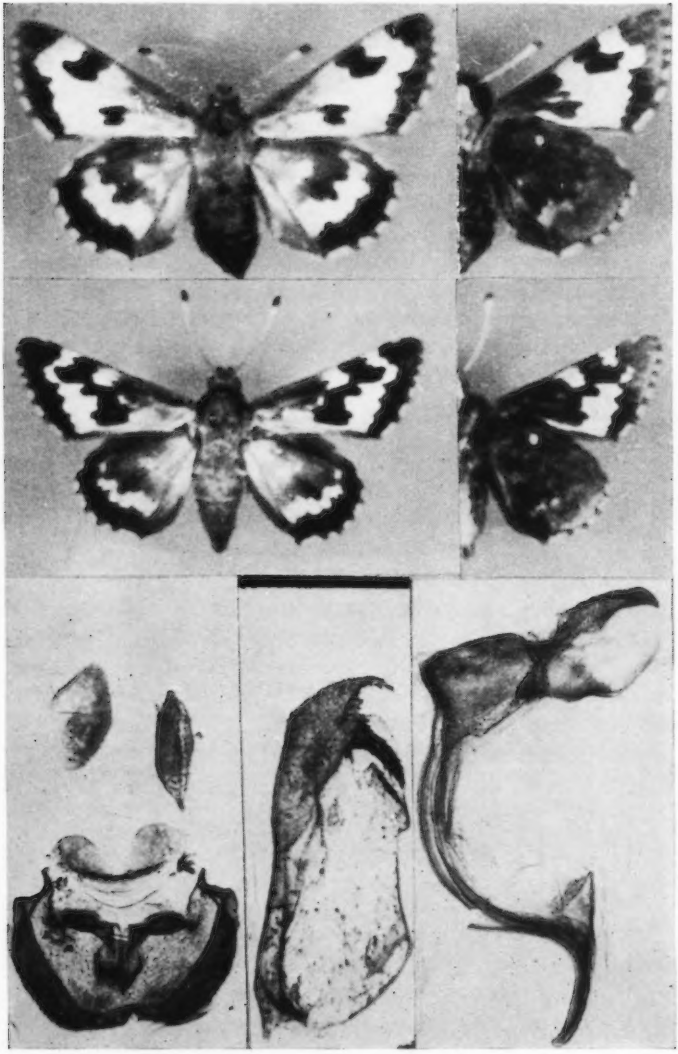

PLATE IV, *Megathymus florenceae*

Top row: Holotype, upper side to left; under side to right.
2nd row: Allotype, upper side to left; under side to right.
3rd row: Left: ♀ genitalia; center: ♂ valva; right: ♂ uncus.

seems to appear. Freeman has already described two species (*chisosensis* and *mcalpinei*) in this group and has examined the type series of the three here described and agrees with us that all are species.

While all six species appear somewhat alike it is rather simple to separate them by constant differences. One of the key differences in the females is the black spots on the upper surface of the forewing located between the base of the wing and the outer angle, usually two or three spots, one above the other. If the spot is about round we call it a *dot* and if elongated a *dash,* if one of the spots is absent we call that a blank. Listing the spots from the bottom to the top of the wing, we then have:

neumoegeni:—dash-dash-dot
chisosensis:—dot-dash-dot
mcalpinei:—dot-dash-dot
judithae:—dash-dash-dot
carlsbadensis:—dash-dash-dot
florenceae:—dash-dash-blank

This key separates *florenceae* into a group by itself, *chisosensis* and *mcalpinei* into a second group and *judithae, carlsbadensis* and *neumoegeni* into a third group. *Neumoegeni* (in both sexes) separates from all the others by its slightly smaller size and the darker ground color (less white overscaling) of the undersurfaces of both wings. *Judithae* (in both sexes) separates from the others by its lighter orange color. *Chisosensis* (in both sexes) separates from the others by the extreme amount of black on the upper surfaces of both wings. The "dot" on the female *neumoegeni* is much smaller than on either *judithae* or *carlsbadensis.*

In the males of the six species (except *chisosensis*) on the upper surface of the forewings there is a large irregular black spot near the base of the wings. This spot is roundish in *neumoegeni, judithae* and *carlsbadensis,* and is rectangular (longer with the body, than wide) in *florenceae* and *mcalpinei.* In *florenceae* the bright orange spot inward from spot 8 always separates it from *mcalpinei.*

All six species are found in isolated desert mountains; the habitat, however, differs. *Neumoegeni, chisosensis* and *florenceae* are found in open woods while *carlsbadensis, judithae* and *mcalpinei,* particularly the first two, are found in open country. The last three named lay eggs on medium to large plants; *neumoegeni* and *florenceae* lay their eggs on tiny juvenile plants. From the few larvae and pupae collected it appears that *chisosensis* lays its eggs on medium to large plants.

The genitalia of the six species are different; however, the female genitalia seem to break into two groups: *mcalpinei, carlsbadensis* and *florenceae* in one group and *neumoegeni, judithae* and *chisosensis* in the other. The male genitalia break into three groups: *neumoegeni* and *judithae; florenceae* and *mcalpinei; chisosensis* and *carlsbadensis.*

A Character Useful in Separating Cafius (sg. Bryonomus Csy.) seminitens Horn and canescens Makl. (Coleoptera: Staphylinidae)

By Rudolf Dvořák, Praha, Czechoslovakia

Cafius (*Bryonomus*) *seminitens* Horn and *C.* (*B.*) *canescens* Makl. are two very closely related species, both of which may occur at the same time in the same localities in California. To distinguish these two species from each other may often be very difficult, and mistakes in identification have often been made. In using existing keys and works of authors one is often at a loss to separate these two species in a large series of specimens due mainly to the individual variability of the shagreen on the shining spots of the head and thorax.

Thanks to Mr. R. Q. Bliss of the Academy of Natural Sciences of Philadelphia and to Mr. R. L. Gillogly of California I received a large number of specimens of both species, and consequently was able to discover that the male copulatory organs constitute an excellent differentiating feature. Sketches of these parts of both species are presented herewith.

C. (*B.*) *seminitens* has the end of the aedeagus well rounded, the paramere stouter and a little shorter. In lateral view, the top also appears rounded. *C.* (*B.*) *canescens,* on the contrary, has an aedeagus with the top prolonged and pointed, and the paramere narrower. The lateral view shows a more swollen convex outline at the end of the outer side.

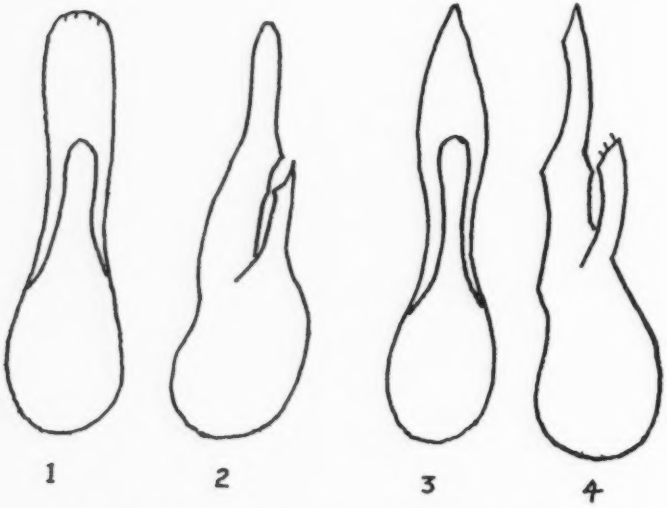

FIG. 1. *Cafius* (*Bryonomus*) *seminitens* Horn. Aedeagus.
FIG. 2. The same, lateral view.
FIG. 3. *Cafius* (*Bryonomus*) *canescens* Makl. Aedeagus.
FIG. 4. The same, lateral view.

New World Apanteles Parasitic on Diatraea. (Hymenoptera: Braconidae)

By C. F. W. Muesebeck, United States National Museum

The seven species of *Apanteles* treated here, of which three were previously described, develop in larvae of species of *Diatraea* that live in the stems of certain grasses. One of them, *xanthopus* (Ashmead), is a solitary parasite; all the rest are gregarious and their cocoons, when formed, are tightly packed in the host burrows.

The following key will distinguish the seven forms.

1. Propodeum with a broad, sharply margined areola, and with distinct costulae that set off large apical, lateral areas. A solitary parasite.....*xanthopus* (Ashmead)
   Propodeum without an areola or with a very narrow one that is usually poorly defined, and with no suggestion of costulae. All gregarious parasites.....2
2. Mesoscutum impunctate.....*impunctatus* Muesebeck
   Mesoscutum distinctly punctate, at least anteriorly.....3
3. Plate of first tergite narrowing conspicuously from middle to apex; tegulae pale.....4
   Plate of first tergite parallel-sided from middle to apex; tegulae black or blackish.....5
4. Hind femora black; length about 3 mm.; female antennae nearly as long as the body; ovipositor sheath longer than hind tarsus.....*minator,* new species
   Hind femora yellow: length about 2 mm.; female antennae much shorter than the body; ovipositor sheath not longer than hind femur.....*zizaniae,* new species
5. Anterior and middle femora entirely yellow: hind femora piceous apically.....*abditus,* new species
   Anterior femora in part, and middle and hind femora entirely, black.....6
6. Plate of first tergite about twice as long as broad; second flagellar segment of female antenna as long as first and twice as long as wide; ovipositor sheath longer than hind femur.....*diatraeae* Muesebeck
   Plate of first tergite three times as long as broad; second flagellar segment of female antenna shorter than first and not nearly twice as long as wide; ovipositor sheath shorter than hind femur.....*deplanatus,* new species

Apanteles xanthopus (Ashmead)

Urogaster xanthopus Ashmead, 1900. Trans. Ent. Soc. London 1900, Pt. 2: 288. ♀.

The type is from the island of St. Vincent. Numerous additional specimens in the U. S. National Museum are labeled as having been reared from *Diatraea saccharalis* (F.) in Argentina, Uruguay and Brazil. Jaynes, 1933 (U. S. Dept. Agr. Tech. Bull. 363: 21), points out that the cocoons occur singly in the smaller tunnels of the host, indicating that only one parasite develops in a host larva, and suggesting further that the *Apanteles* attacks the very small borers "shortly after they enter the stalk, or possibly even before they actually enter it."

This differs strikingly from all the other American species parasitic on *Diatraea* in its strongly sculptured and areolate propodeum. The thorax is not noticeably depressed; the female antennae are fully as long as the body; the mesoscutum is closely, finely punctate, confluently so anteriorly; the plate of the first tergite is nearly parallel-sided and about twice as long as broad at apex, and the ovipositor sheath is at least as long as the hind femur but decidedly shorter than the hind tibia. The legs, including all coxae, are yellow.

Apanteles impunctatus Muesebeck

Apanteles impunctatus Muesebeck, 1933. Proc. Ent. Soc. Wash. 35: 194. ♂♀.

This species is known only from the type series of 18 specimens which were reared from a single larva of *Diatraea saccharalis* (F.) in Louisiana.

Apanteles minator, new species

This is conspicuously the largest of the known American gregarious species of *Apanteles* that parasitize *Diatraea* larvae. It differs further in its less strongly depressed thorax, and in its longer ovipositor sheath which is longer than the hind tarsus.

Female. Length 3 mm. Head not broader than thorax; face only slightly convex, smooth and shining; frons polished;

temple with weak, setigerous punctures, somewhat receding; antenna nearly as long as the body, flagellar segments 1 to 8 at least twice as long as broad, the first not longer than the second.

Thorax a little broader than high; mesoscutum rather closely punctate, especially anteriorly, impunctate and polished at posterior border; disc of scutellum flat, polished, impunctate; polished area on lateral face of scutellum triangular and extending almost to base; propodeum indefinitely sculptured along lateral margins and down the middle, with an indication of a narrow, elongate areola; meso- and metapleuron impunctate, polished; hind coxa polished; inner spur of hind tibia much less than half as long as metatarsus; radius tending outward, very slightly longer than intercubitus; stigma and metacarpus subequal in length.

Abdomen with plate of first tergite narrower at apex than at base, more than twice as long as broad at apex, the apical half finely longitudinally rugulose and with a shallow, longitudinal median impression; plate of second tergite smooth and polished, slightly broader at base than long, defined laterally by strongly oblique grooves that diverge caudad, its posterior margin arcuate; ovipositor sheath slightly curved downward at apex, a little longer than hind tarsus.

Black; antennae, labrum and mandibles brownish black; tegulae transparent whitish; wings hyaline, stigma and veins hyaline except stigmal margin, radius, intercubitus and stub of last abscissa of cubitus, which are pale brown; anterior and middle legs brown, their coxae blackish; hind legs with coxae black, trochanters brown, femora piceous, tibiae light brown on basal two-thirds and blackish on apical third, and tarsi brownish black.

Male. Like the female except for the normal sexual differences and in having the antennae longer than the body and the legs more extensively darkened.

Type. U. S. National Museum No. 63285.

Type-locality. Misiones, ARGENTINA.

Described from five females and three males reared from *Diatraea angustella* Dyar by H. L. Parker.

Apanteles zizaniae, new species

Distinguished from all the other gregarious species considered here, except *impunctatus,* by its entirely yellowish legs, and from *impunctatus* by its distinctly punctate mesoscutum.

Female. Length about 2 mm. Face strongly convex, only about one-third as long as broad, weekly punctate and subopaque; frons smooth and polished, more than twice as long as face; level of upper eye margins far below anterior ocellus; antenna much shorter than the body, first flagellar segment longer than second, second twice as long as broad, flagellar segments 10 to 15 not distinctly longer than broad.

Thorax strongly depressed; mesoscutum distinctly punctate, the punctures weaker posteriorly; disc of scutellum flat, smooth and polished; propodeum nearly horizontal, mat, finely rugulose, and with a poorly defined median longitudinal area; first abscissa of radius and intercubitus subequal in length, meeting in a very weak angle; hind coxa smooth and shining; hind femur about three times as long as its greatest width; inner calcarium of hind tibia hardly half as long as metatarsus.

Abdomen with plate of first tergite parallel-sided on basal half, narrowing gradually from middle to apex, about three times as long as broad at apex, finely rugose, its flexible margins broad; plate of second tergite smooth and polished, strongly transverse, defined laterally at base by short, widely divergent grooves, less than half as long as broad at base and only one-fourth as long as the third tergite; suture separating second and third tergites very weak, sometimes not distinct; ovipositor sheath hardly as long as hind femur.

Head and thorax black; abdomen dark brown, with plate of first tergite black; antennae brown, yellowish basally; all legs yellowish; wings hyaline, stigma brown.

Male. Essentially like the female but with the antennae as long as the body, more slender than in the female and paler in color.

Type. U. S. National Museum No. 63286.

Type-locality. Anacostia Island, District of Columbia.

Described from 16 females and 1 male reared by C. E. Chambliss from *Diatraea* sp. in wild rice from the type locality, and 3

specimens of each sex reared from a larva of *Diatraea* sp. in wild rice, at Wilmington, Delaware, by H. L. Dozier.

Apanteles abditus, new species

In habitus very similar to *diatraeae* Muesebeck, but distinguished especially by the much narrower sclerotized plate of the first tergite which is more than three times as long as its median width, by its somewhat shorter antennae and paler legs, and by having the first abscissa of the radius usually shorter than the intercubitus.

Female. Length about 2 mm. Head broader than thorax; face much broader than long, convex, smooth and shining; frons and vertex smooth and shining, impunctate; temple not receding but less than half as wide as eye; antenna shorter than body, first flagellar segment conspicuously the longest, flagellar segments 10 to 15 as broad as long.

Thorax strongly depressed; mesoscutum shining, sparsely punctate on anterior two-thirds, impunctate and polished posteriorly; disc of scutellum flat, impunctate, polished; propodeum only slightly declivous, finely rugulose, with a poorly defined, narrow, median longitudinal area and without costulae; mesopleuron polished, impunctate; posterior femur rather stout; inner calcarium of hind tibia less than half as long as metatarsus; first abscissa of radius usually distinctly shorter than intercubitus and joining the latter in a distinct angle.

Abdomen about as long as thorax; sclerotized plate of first tergite more than three times as long as its greatest width, nearly parallel-sided, weakly sculptured on caudal half; second tergite with two short, oblique furrows delimiting the central plate basally; suturiform articulation not evident; abdomen beyond first tergite polished; ovipositor sheath about as long as hind femur.

Black; antennal flagellum yellowish brown toward base; palpi pale yellow; all coxae black; remainder of legs yellowish except hind femora which are more or less piceous, and hind tibiae apically and hind tarsi which are dusky; tegulae and wing bases blackish; wings subhyaline, stigma pale yellow, transparent; veins pale.

Male. Essentially like the female but with the antennae slender and longer than the body, all the flagellar segments being at least twice as long as broad.

Type. U. S. National Museum No. 63287.

Type-locality. Itaquaquecetuba, BRAZIL.

Described from 20 females and 1 male reared by H. L. Parker from a *Diatraea* larva in a grass belonging to the genus *Panicum.*

Apanteles deplanatus, new species

Most similar to *abditus,* described above, but with the posterior legs largely black, the stigma brown rather than hyaline as in *abditus,* and the propodeum smooth and shining each side of the median area.

Female. Length about 2 mm. Face twice as broad as high, convex, shining, weakly punctate; antennae longer than head and thorax combined but shorter than the body; first flagellar segment distinctly longer than second, which is less than twice as long as broad; last ten segments of flagellum as broad as long.

Thorax strongly depressed, flattened above; mesoscutum shining, with numerous though distinctly separated punctures except posteriorly where it is smooth and polished; disc of scutellum flat, polished and impunctate; propodeum nearly horizontal, only very slightly and gradually declivous caudad, with a weak suggestion of a median longitudinal area, the space between this and the large spiracle on each side smooth and polished, the posterior lateral angles a little rugulose; first abscissa of radius and intercubitus subequal and meeting in a distinct angle; hind coxa smooth and polished; hind femur only slightly more than twice as long as broad; hind tibia conspicuously thickened apically, its inner calcarium nearly or quite half as long as metatarsus.

Abdomen with plate of first tergite more than three times as long as broad, very weakly sculptured; second tergite less than half as long as third, its central plate barely as long as broad at base, defined laterally by sharp, posteriorly divergent grooves, smooth and polished; the following tergites smooth and polished; ovipositor sheath shorter than hind femur.

Black; antennae brownish basally; anterior femora apically, anterior and middle tibiae and their tarsi yellowish brown; hind tibiae brown basally; wings hyaline, stigma brown.

Type. U. S. National Museum No. 63288.

Type-locality. MEXICO.

Described from 12 female specimens reared from a larva of *Diatraea* sp. in sugarcane from an unknown locality in Mexico, intercepted at Laredo, Texas, March 2, 1949, by inspectors of the U. S. Department of Agriculture.

Apanteles diatraeae Muesebeck

Apanteles diatraeae Muesebeck, 1921. Proc. U. S. Nat. Mus. 58: 491, 520. ♂ ♀.

The type series is from Cuba but I have seen numerous specimens from other islands of the West Indies, and also from various localities in Central and South America, as well as one series from Arizona. The recorded hosts are *Diatraea saccharalis* (F.), *D. lineolata* (Walk.), and *Zeadiatraea grandiosella* (Dyar).

Professor Bradley Honored by the Tenth Congress

One of the actions taken by the recent Tenth International Congress held at Montreal was the election of DR. J. CHESTER BRADLEY as an Honorary Life Member of the congresses. Dr. Bradley also continues as a member of the Permanent Committee of the entomological congresses. DR. O. A. JOHANNSEN is the only other American Honorary Life Member, having been elected at the Stockholm congress in 1950. Both Professors Bradley and Johannsen have long been members of the American Entomological Society and contributors of scientific papers to ENTOMOLOGICAL NEWS.

Review

BEITRÄGE ZUR SYSTEMATIK DER LARVEN DER ITONIDIDAE (= CECIDOMYIIDAE, DIPTERA). Teil 1: Porricondylinae und Itonidinae Mitteleuropas, by Edwin Möhn. Zoologica, Band 38, Lieferung 1, Heft 105, Lieferung 1 and 2, pp. 1–247, 30 plates. 1955.

In spite of the fact that there is an abundance of gall midges in Europe, and many are of economic importance, very few entomologists have turned their attention to a taxonomic study of the larvae of these insects. Dr. Möhn is presenting for the first time a comprehensive treatise on the larvae for the entire family Itonididae. Part 1 is a very admirable study of the subfamilies Porricondylinae and Itonidinae, which comprise the vast majority of the family. (It should be mentioned that at the Copenhagen Congress, the International Committee on Zoological Nomenclature ruled that a family name may be based on a genus placed in synonymy. Hence the Meigen 1800 names do not invalidate the better known family names in the Diptera, and Cecidomyiidae must replace the rather recent change to Itonididae. Similarly the Porricondylinae must revert to the Epidoseinae. However, the usage employed by Dr. Möhn is employed in this review.)

Following a section describing the taxonomic features exhibited by the larvae, there is a brief section on their biology and ecology. The section on general taxonomy is a valuable contribution on comparative morphology as related to phylogenetic relationships. On a basis of personal study, Dr. Möhn has been able to characterize 129 genera, while 15 other genera are included on a basis of published descriptions. Only 31 genera that are known to occur in central Europe remain unknown.

Keys are presented to the subfamilies and genera. It is particularly noteworthy that this is the first time that keys have been prepared for the identification of the larvae of porricondyline, asphondyliine, oligotrophine, and lasiopterine midges.

Although certain anatomical features of cecidomyiid larvae were first noted rather early in the eighteenth century, it was

not until late in the nineteenth century that any attempt was made to present a diagnostic description. Shortly thereafter, J. J. Kieffer began to pioneer larval systematics, and in 1913 he presented keys to many of the lestremiine and cecidomyiine genera.

Dr. Möhn has provided the first comprehensive work on gall midge larvae since that by Kieffer. It is generally accepted that Kieffer maintained no collection, but Dr. Möhn was fortunate in having access to the valuable material of Rübsaamen. He was also able to study larval specimens from the extensive collection of Dr. H. F. Barnes and enlisted the aid of other cecidologists.

The higher classification of gall midges until rather recently has consisted of three subfamilies, in one of which a few tribes were recognized. Enderlein (1936) recognized four subfamilies and a very large number of tribes, his work, of course, being based on adult morphology; but his classification, for the most part, has not been accepted. Limited contributions toward a suprageneric classification have more recently been made by F. W. Edwards; and M. J. D. White has made proposals based on cytological studies.

This is the first attempt to further our knowledge of the phylogenetic relationships of the gall midges on a basis of morphological studies of the larvae. Dr. Möhn recognizes the four subfamilies of Enderlein. Furthermore, he recognizes within the Itonidinae the four supertribes of Enderlein. However, larval relationships are found to be strongly divergent to Enderlein's opinions concerning tribes and subtribes. Rather than use formal names that might lead to confusion, Dr. Möhn has merely recognized a large number of generic groups to show immediate relationships.

Thus, in this excellent monograph, a new tool has been used to clarify phylogenetic relationships within the Itonididae, keys have been presented to facilitate identification of the larvae of most of the middle European genera, and a diagnosis is given of each genus and many species. It is hoped that there will be no delay in Dr. Möhn's treatment of larval forms representing the rest of the family.—A. Earl Pritchard

Notice: The December 1956 issue of Entomological News was mailed at the Post Office at Lancaster, Pa., on December 1, 1956.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

Conopidae of the World wanted. Will pay 10¢ to $1.00 for pinned and labelled specimens. S. Camras, 4407 N. Milwaukee Ave., Chicago 30, Illinois.

Anisoptera—Nearctic sp. wanted for exchange, espec. Ophiog., Arigom., Aeschna, Neurocor., Somatoc., Cordulia, Dorocor., Leucor. R. D. Cuyler, Dept. of Entomology, N. C. State College, Raleign, N. C.

Bembicini and Stizini (Hym., Sphec.) of New World wanted for revis. study. Will return upon request or at end of project. James E. Gillaspy, Dept. of Zoology, Univ. Texas, Austin 12, Texas.

Agapema galbina. Will exchange cocoons of this moth for nature books. E. Frizzell, Route 4, Box 96, San Benito, Texas.

Wanted—Data on exact location of colonies of *Epibembex* (olim *Bembix*) (Hymenoptera), any species, any part of country, for biological studies. Howard E. Evans, Dept. Entomology, Cornell Univ., Ithaca, N. Y.

Tenebrionidae of the World wanted, in exchange for insects of Argentina and neighboring countries. Horacio J. Molinari, Av. Lib. Gral. San Martin 55, Acassuso (Buenos Aires), Rep. Argentina.

Original Karlsbader DURABILE Insect Pins

First class, hand made pins. Now, again, in sizes No. 000 to 7. Price US $2 per 1000, f.o.b. Eschwege. Minimum order 5000, less 5% on over 50,000. *Minuten pins,* price US $1.20 a thousand. Send postal money, or check with order, or use confirmed bank credit (Bank Cto. 5593 Commerz-u. Creditbank, Eschwege/Werra.

Send for samples and detailed price lists.

FELIX SAVAÈTE, Eschwege/Werra, Germany.

WILEY BOOKS

The NEW and the OLD join forces in the SECOND EDITION . . .

A TEXTBOOK of ENTOMOLOGY

By HERBERT H. ROSS, University of Illinois.

THE NEW—

This second edition covers the recent advances in our knowledge of insect physiology, insect evolution, and insect biogeography and paleo-ecology. The author has almost entirely rewritten the chapters on Arthropoda and their allies, the material on geological history, and many sections on physiology. The new version includes enlarged and reworked keys to orders of insects. Entire new sections on aquatic insects and many new drawings have been added as well. In addition, much of the author's coverage of the ecological aspects of the subject has been changed in the light of current ideas.

THE OLD—

This text will continue to provide students with a broad introduction to the basic fields of entomology—including morphology, physiology, taxonomy and ecology. The author also continues to stress the integration of entomology with the general concepts of biology. He presents his material in an evolutionary manner wherever possible, so that the student may acquire a unified picture of the subject as a whole.

THE COMBINATION—

forms a superior text, ideal for classroom use.

150 YEARS 1807 1957 OF PUBLISHING

1956. 519 pages. 437 illus. $7.75

SEND FOR YOUR ON-APPROVAL COPY TODAY.

JOHN WILEY & SONS, INC., 440-4th Ave., New York 16, N. Y.

Just Published

MEMOIRS OF THE AMERICAN ENTOMOLOGICAL SOCIETY

Number 15

251 pages of text, 19 pages of tables, 7 maps, 47 plates, 3 pages of contents and index

THE NEOTROPICAL SPECIES OF THE 'SUBGENUS AESCHNA' SENSU SELYSII 1883 (Odonata)

By Philip P. Calvert

This paper presents an account of the Neotropical species referred by de Selys in 1883 to his subgenus *Aeschna* and of some species unknown to him. His subgenus is here divided into three genera, *Aeschna, Coryphaeschna,* and *Castoraeschna, Aeshna* in its turn being subdivided into the subgenera *Aeschna, Hesperaeschna, Rhionaeschna, Schizuraeschna, Marmaraeschna* and *Neureclipa.* These five subgenera include 2, 15, 1, 3, 4 and 5 species and subspecies respectively. *Coryphaeschna* embraces 9 species and subspecies, *Castoraeschna* 5. Larvae of 2 species of *Hesperaeschna,* 1 species of *Schizuraeschna,* 1 species of *Neureclipa* and 6 species of *Coryphaeschna* are described and figured. Generalities are discussed under the headings: Relationships of the Neotropical Aeshnas to the North American fossils; Relations of the South American Aeshnas to the Palaearctic and Australian species; The geological age and geographical distribution of the ancestors of the Odonata and of the Mammalia; Relations of the Neotropical Aeshnas to each other; The seasonal distribution of the Neotropical species of Aeshna. Forty plates in black and white illustrate the structural and colorational features of the adults, seven those of the larvae. Nineteen tables show the variations in size and in venation of the adults. Six maps show the geographic distribution of all the species concerned. There is an alphabetical index of species, subgenera, genera, authors quoted, and topics.

Price $10.00 postpaid

THE AMERICAN ENTOMOLOGICAL SOCIETY

1900 RACE STREET, PHILADELPHIA 3, PA.